Science Fair Project Suggestions

1. **Zoology**: The study of animals as simple as microbes and as complex as human beings.
2. Studying the human animal
3. Video games and your heart: This project investigates whether video games, especially those with a violent content, can lead to increased cardiovascular activity; furthermore, this project explores the similarities of people affected by video games and those who have an increased risk of cardiovascular disease.
4. Music and the body: The purpose of this experiment is to test the effects of music on the mind and body. What impact does music have on a person’s vital signs? Do different types of music elicit different responses?
5. Biocides
6. Natural Pesticides: This topic explores the question of whether there are any naturally occurring insecticides in common plants, such as cumin and garlic, by testing them on the common fruit fly. There are two parts to this experiment: an exposure test to see if these extracts kill flies, and an avoidance test to see if these extracts repel or attract flies.
7. Herbs and Germs: Can herbs be used to prevent the growth of microbes? In this project, you’ll test to see if certain common herbs are capable of inhibiting the growth of a non-pathenogenic variety of E. coli, testing to see if they can control the spread of this microbe and possibly control the spread of disease in general.
8. The lives of animals
9. Temperature and mosquitoes: This project investigates the effect of temperature on the development of mosquito larvae. In the first part of the experiment, you will see if temperature can kill the mosquito at certain stages of development; in the second part, you’ll see if temperature affects mosquito development by determining if it affects the ratio of male to female mosquitoes.
10. Vitamins and regeneration: This project tries to determine if Vitamin H (biotin) is beneficial to a planaria (similar to a slug)’s ability to regenerate lost body parts, and if so, which concentration is most beneficial.
11. Animals and our environment
12. Fossil fuels and animals: In this experiment, you will investigate the effect of coal fly ash (which contains small particles that interfere with the normal functioning of many kinds of animals) on mealworms, since this common terrestrial insect larvae can be used as an indicator species to see if varying levels of coal fly ash can interfere with an organism’s normal growth and development.
13. Predator-prey relationships and population dynamics: In the first part of this project, you will perform an experiment to see how many offspring a single female aphid (plant lice) can produce in her lifetime. In the second part, you will use math to calculate a “doomsday chart” to determine how long it takes for a single female aphid to generate a population of one million insects and beyond, assuming no aphid deaths.
14. **Environmental Science**: The study of everything in an organism’s environment, from the point of view of that organism; in other words, the nonliving, living and all other factors (temperature, radiation, etc.) of an organism’s environment, no matter what kingdom the organism is classified under. In addition, the study of environmental science can also be defined as the way that human populations and our technologies affect our planet and its global ecology.
15. Applied Ecology
16. Bug lights and their effectiveness: Some people leave their bug lights on all night, while others only turn them on when they are outdoors; however, most insects are beneficial because they kill harmful insects. So, do bug lights differentiate between “good” bugs and “bad” ones?
17. Composting goes high-tech: The purpose of this experiment is to maximize the efficiency of a compost (or waste) heap. By building a small-scale compost heap that simulates the interior of an actual one, you will be able to study the various aspects of the compost process.
18. Soil Ecosystems
19. Earthworms and humus: How quickly can earthworms turn organic waste products (such as grass clippings) into humus, the partially decomposed plant and animal matter mixed with earth? In this project, you will find out how much humus earthworms can create in one week.
20. Nitrogen fixation and acid rain: This experiment explores the effect of acid rain on nitrogen fixation, or the process by which bacteria convert free nitrogen into a form that green plants can use. The question here is: how does environmental stress such as acid rain affect the nitrogen-fixing capabilities of bacteria?
21. Energy: for Better and for Worse
22. Solar energy: This experiment will teach you how to maximize the efficiency of solar cells. You will determine which angle is most efficient for energy collection and how weather conditions affect a solar cell’s collection capability by creating a simple solar cell and testing it in different ways.
23. Wind power, an alternative to fossil fuels: Wind has been harnessed by humans for centuries, but new high-tech innovations can make wind a major player in solving our modern environmental problems. This project explores which combination of blades and wind speed on a wind turbine produces the most energy.
24. Aquatic Ecosystems
25. Fertilizer and sewage in aquatic ecosystems: Natural ecosystems strike a balance between the amount of nutrients entering the system and the amount used by that system; in this project, you will study how human intervention prevents this balance and leads to the detriment of water quality and aquatic life.
26. Nutrient-enriched waters and algae: In this experiment, you will study the effect of algae death on the population explosion of bacteria, which in turn creates the collapse of an aquatic ecosystem and the death of a lake; this process causes the lake to dry out, creating a wet meadow.
27. **Microbiology**: The study of microorganisms, or organisms that require a microscope to study.
28. **Controlling and using microbes**
29. Oysters, hot sauce and bacteria**: Does hot sauce kill bacteria found on raw oysters? In this experiment, you will discover whether people who like hot sauce on their oysters ingest fewer bacteria than those who do not. Tabasco sauce, which contains a chemical called capsaicin (the “hot” in hot sauce), will be tested to find out whether or not it kills raw oyster bacteria.**
30. Trees and bacteria**: Can tree bark inhibit the growth of bacteria? This project investigates whether the bark of four North American trees can inhibit the growth of E. coli and** Bacillus subtilis**.**
31. **Microbes on the move**
32. Insects and microbes**: Can insects transport microbes? Think about times when flies have landed on your food or roaches have crawled across your kitchen floor—where were they before you saw them? Can insects transport pathenogenic microbes from place to place? Do different insects carry difference numbers or types of microbes?**
33. Spreading germs**: Does shaking hands or coughing without covering your mouth really spread bacteria? This project is divided into two parts: first, investigating whether microbes are transmitted from one person to another by a simple handshake; second, investigating how far air can transmit microbes when a person coughs or sneezes.**
34. **Garlic, health and microbes**
35. Common spices and microbes**: When foods are grown or raised, processed, packaged, distributed and stored on a shelf, they are candidates for contamination. The purpose of this study is to determine if vapors from common spices can reduce or eliminate bacterial growth.**
36. Garlic juice and microbes**: Does garlic juice have antimicrobial qualities? The alliciin in garlic has an antibiotic action that is equivalent to one percent that of penicillin, as well as an antifungal agent that is effective against candidiasis, athlete’ foot, yeast infections and many other fungi. This project asks this question: can garlic help protect us from the occasional spread of E. coli throughout our bodies?**
37. **Microbes are everywhere**
38. Bottled water and microbes**: This experiment is designed to compare the purity of different brands of bottled water. You will culture any microbes that might be present in a variety of bottled water, comparing domestic vs. imported water, carbonated vs. non-carbonated and everyday tap water to find out if bottled water is as pure as advertised and what kind of bottled water (or tap) is the safest to drink.**
39. Molds in the home**: This experiment surveys mold populations in the air conditioner, vacuum cleaner and your house in general. It is correct to assume that mold spores are in your home to some degree, but the question is where can they be found?**
40. **Controlling microbes with antimicrobial products**
41. Resistant bacteria**: Do bacteria become resistant to household disinfectants? Super germs are bacteria that have become resistant to many common antibiotics, a classic case of natural selection, easily seen because bacteria reproduce rapidly enough for these changes to be noticeable. In this project, you will culture some common bacteria and create antibiotic discs soaked in various disinfectant products five times, and the resulting colonies of bacteria will be cultured and tested once again to see how resistant they have become to the disinfectant over this period.**
42. Microbes in the home**: How effectively do we eliminate microbes from our homes? This experiment investigates two things: how effectively disinfectants remove microbes from surfaces in the bathroom, and how effective dish detergents are at cleaning the microbes off of dirty utensils.**
43. **Microbes and humans**
44. Buffers**: how important are buffers, or agents that maintain a constant pH level in a microbe’s environment, to the survival of bacteria? This project examines the ability of a buffer to prevent waste and other byproducts of metabolism from changing the pH of a bacteria’s habitat, a situation that without a buffer would end up killing the bacteria.**
45. Electromagnetic fields and aquatic organisms**: Does electromagnetic radiation affect populations of brine shrimp, small crustaceans that play an important role in the marine food web? In this project, you will do three things: first, set up a simulation of a hatchery; second, prepare the coils to produce an electromagnetic field; third, run the actual experiment by taking samples and counts of the shrimp in the experimental and control groups at various intervals.**
46. **Botany**: The science of plants and plant life.
47. Looking for solutions to environmental problems associated with plants
48. Using natural pesticides: Can citrus oil, garlic or jalapenos control insect pests? In this project, you will investigate lemon peels that can disrupt some insects’ nervous systems, garlic spray that can be both an insect repellent and an antibiotic for plants and the capsaicin found in jalapenos that can be an effective pesticide against ants, root maggots and soft-bodied insects.
49. Natural fertilizers: Can natural fertilizers, such as compost, replace synthetic fertilizers made of harsh chemicals? Can compost completely replace commercial fertilizer or should compost be used to supplement synthetic products?
50. The assault on plants
51. Acid rain and direct contact: Does direct contact of acid rain on bean plants harm growth? The two main components of acid rain are nitric acid and sulfuric acid, both of which are formed by the burning of fossil fuels. In this experiment, you will discover if the leaves of plants are damaged when they come in direct contact with acid rain and whether increased acidic conditions cause more damage.
52. Holes in the ozone layer and unicellular organisms: Does short-term exposure to ultraviolet light affect Egulena, a protist that is part animal and part plant? This one-celled organism moves about like an animal but performs photosynthesis like a plant—is UV radiation harmful to this organism; and if so, should we worry about UV’s effect on humans?
53. Plants and plant life
54. Indoor air pollution and houseplants: Which houseplants best clean the air, a process called phytoremediation? Plants take in carbon dioxide and release oxygen and water in a process called transpiration; so, which houseplants have the highest transpiration rates under the same environmental conditions?
55. Dried-up ponds: If a pond dries up completely and then weeks or months later refills with water, is it repopulated by organisms newly introduced to the pond or can some organisms survive droughts?